

Realistic simulation as a facilitating tool in the teaching-learning process in urgency and emergency: Experience report

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Abstract— *Objective: to describe the experience of professors and students of the undergraduate nursing course in the use of realistic simulation as a methodology to facilitate the teaching-learning process in the curricular component "Nursing Care in Emergency and Trauma". Method: experience report, with participatory observation of professors and students of the undergraduate nursing course at the University of the Amazon, Belem, State of Para, Brazil, regarding the use of active methodologies in the construction of teaching in Urgency and Emergency, in the period included from August 6 to December 22, 2019. Result: in this teaching-learning process, with the simulation methodology, teachers played a fundamental role, acting as facilitators, emphasizing self-directed and student-centered learning. Such experiences allowed the actors involved to see teaching in the laboratory as a privileged space, which requires constant interaction between academics and teachers when integrating theory learned in the classroom with practice. Conclusion: the use of realistic simulation as an active teaching methodology, contributes to increase the self-confidence, self-knowledge and psychomotor skills of students in practice, in addition to providing theoretical-practical dialogue aimed at the profile of the professional to be trained.*

Keywords— *Teaching. Simulation Training. Health Education. Education, Nursing, Baccalaureate.*

I. INTRODUCTION

Caring more than a simple repetition of tasks, translates into complex and dynamic work, with scientific methodology and accurate clinical reasoning. In this way, current nursing seeks to reframe the care and teaching processes for the construction of knowledge with a scientific, clinical, technical and technological basis⁽¹⁾. Clinical simulation is a method that aims to improve reasoning and critical thinking, which qualifies the

knowledge and assessment skills and decisions required in care practices⁽²⁾.

In this context, simulation teaching corroborates the recommendations of good nursing practices and the current recommendations of the Quality Committee in Health Care of America, which deals with the prevention of errors and patient safety, assuming that the team's learning be achieved through the use of simulation, based on the management of the team in an emergency and encouragement of interdisciplinarity, adapting to the

parameters established internationally for teaching, where the training of professionals must meet the demands of globalization⁽¹⁻²⁾.

The use of realistic simulation strategies has its genesis in military, aviation, aerospace and nuclear training, which have always valued the quality of service and minimizing errors⁽¹⁾.

Patient safety has become a global challenge for healthcare organizations worldwide. The report "To err is human" presented worrying data regarding the number of deaths, showing around 48,000 to 98,000 deaths per year. Estimates currently point to more than 400,000 deaths from errors in the health area, despite the measures and policies instituted worldwide⁽³⁾.

Using simulation as a teaching method is challenging, as it must be embedded in the Pedagogical Project of the Course of Higher Education Institutions, becoming a reality, based on actions that give rise to reflections about training, through investments in the composition of commissions permanent assessment and, above all, the permanent training of teachers and insertion of the academic community in research with the objective of strengthening the teaching-learning process⁽²⁾.

Realistic simulation is seen as an effective and innovative method that expands the relationship between the theory and practice of the student body in a safe environment, offering better opportunities for learning and training, contributing to the qualitative training of the professional. In its last stage, simulation allows a proposal for reflective discussion (debriefing) about the situation experienced, the learning process and the decisions taken during the simulated service, stimulating the student's critical and reflective thinking, consolidating knowledge. Simulation in the educational process of health professionals provides the opportunity for the development of varied skills and competencies necessary in a controlled and protected environment, allowing repetition, errors and professional growth, without risking patient safety⁽⁴⁾.

The simulation gives the student the ability to deal with feelings of insecurity, fear, uncertainty and motivation for questions about the procedures performed, leading to the construction of experiences that require reflection and allows the possibility of acquiring the ability to self-conduct the training process. The student is evaluated about their actions, in addition to pertinent considerations that will allow them to reformulate and reframe their conduct, contributing so that the teacher can evaluate the progress and effectiveness of their classes and qualify undergraduate nursing education, in its theoretical and practical bases. methodological⁽²⁾.

In this context, realistic health simulation has been a strategy explored in teaching laboratories and simulation centers, aiming to provide a reflective and transformational environment for the development of skills and competencies essential to patient-centered care and achievement of the proposed objectives and results for the learning and improvement process⁽³⁾.

The use of simulation techniques favors the implementation of the National Curriculum Guidelines for the Nursing course, given that the profile of the graduate who wishes to graduate is that of a generalist and humanistic, critical and reflective professional, capable of learning to learn and have commitment to education and training⁽²⁾.

Thus, the integration of different health teaching methodological strategies that enable the articulation of theory and practice has been pointed out as an effective mechanism in higher education, capable of training more critical, reflective and prepared professionals for professional performance, provided with maturity expected by society and the labor market⁽⁴⁾.

In order to improve training results, realistic health simulation for the education and training of professionals in the field has grown as one of the strategies for the development of technical and non-technical skills. Technical skills are understood by specific procedures in each specialty, and non-technical skills involve cognitive, social and relational skills that complement the technique for the performance of professional practice with quality and safety⁽³⁾.

The benefits of simulation-based teaching are many, as they provide teachers with opportunities to assess and measure the student's ability to integrate; it also allows the chance to make mistakes and thus lead to professional growth without compromising patient safety, since the knowledge acquired is realized through programmed situations, which represent the professional reality, still allowing control of external factors, standardization and systematization of teaching beyond positive feedback to students⁽²⁾.

Recognizing the relevance of the aspects mentioned in the teaching-learning process in relation to nursing skills, this study aims to describe the experience of professors and students of the undergraduate nursing course in the use of realistic simulation as a methodology that facilitates the teaching-learning process in the curricular component "Emergency Nursing Care and Trauma".

II. METHOD

Report of experience with participatory observation of professors and students of the undergraduate nursing course at the University of the Amazon (UNAMA), Belem, State of Para, Brazil, regarding the use of active methodologies in the construction of teaching in Urgency and Emergency, in the period included from August 6 to December 22, 2019.

The descriptive method was used. For this, a critical analysis of the activities developed during the school period was carried out.

The discipline of Emergency Nursing Care and Trauma is a mandatory curricular component of the undergraduate nursing course, being taken in the seventh academic period of this higher education institution. It has a theoretical-practical character with 80 hours.

The activities were developed together with student monitors who had already taken the course. These were approved in an internal selection process instituted in the first semester with entry in the second semester of 2019 through the request of the professor in charge of the discipline, of the academic board of UNAMA in line with the coordination of the Nursing Course.

It should be noted that the selection process consisted of a written test, an interview with the judging committee, chaired by the professor responsible for the discipline and an analysis of the academic performance of the candidates. In this process, three monitors were selected, one with a scholarship and two volunteers, who were subsequently distributed in the three shifts.

The activities were developed both in the classroom and in the realistic simulation laboratory, where there was the opportunity to develop students' skills and abilities in the elaboration of the activity plan, exercise with the students, clarifying doubts about the subjects taught or remembering the practical maneuvers developed in previous semesters in line with the curriculum design, always under the supervision of the teacher responsible for the discipline.

The monitors fulfilled a mandatory workload of 20 hours per week in accordance with the selection notice, 12 hours of which are intended for student assistance in the monitoring room or in the realistic simulation laboratory, 4 hours for the study of the discipline and 4 hours for academic production. The schedules were distributed to the 3 monitors throughout the week, in the morning, afternoon and night shifts.

During the five-month period, these students met with the teacher who subsidized and consolidated the necessary

information for the improvement of the group's cognitive, psychomotor, affective and attitudinal competences in face of the constructed clinical situations / scenarios. The questions that arose were promptly clarified, so that students could acquire greater confidence and security to act in the face of the formulated cases.

The period of organization of content and construction of cases and scenarios lasted one month. The last four months were devoted to the implementation, implementation and final adjustments of clinical cases. The implementation of the cases occurred in order to reproduce care experiences for the group, which require nurses to develop skills related to cognition, psychomotricity, attitudes and behaviors.

For this, initially, an environment for simulation was created inside the laboratory, where the group of students, together with the teacher, met weekly to adapt and program the scenarios of clinical cases to be applied with the class. Subsequently, the cases were implemented, using the simulation strategy to verify their scientific applicability and the achievement of the objectives proposed by the teacher in relation to the expected performance of the students.

Immediately before implementing a case, students were informed by the teacher about the clinical history of the patient with whom they would work. In a last moment, after each simulation, the students, together with the teacher, met in a private environment to carry out the debriefing. At this stage, in each scenario experienced, the best practices were discussed in relation to situations, the adequacy of behavior, attitudes and posture. Then, the teacher was offered reinforcement of successful practices to stimulate the student's scientific growth.

This experience aimed to include the simulation method, with the aim of minimizing insecurities, strengthening knowledge bases, promoting, in a safe environment, the repetition of clinical situations that would hardly be experienced in hospital practice.

With this, it was expected to reduce the existing gap until the present day between theory and practice, in addition to optimizing the technical-scientific use of the course by the student body. In this perspective, the guiding question of this report was "Can insecurity, fear and lack of practical experience limit the nurse's performance as a professional?

To support the teaching process, in this experience, they were listed as material and methodological resources: media resource, TV, internet, simulator mannequin (Resusci Anne - LAERDAL®), for cardiopulmonary arrest training and Automatic External Defibrillator simulator,

cervical collar, long board, dorsal immobilizer vest, multiparametric monitors, infusion pumps, electrocardiograph device, laryngoscope, tubes, probes, drains, catheters, among other materials necessary for the construction of clinical scenarios.

The execution and management of the entire simulation process was carried out by academic monitors of the Nursing undergraduate course with the supervision and guidance of instructing professors linked to the discipline.

In order for the instructors (teachers and student monitors) to start the stage of practical activities, first there was an explanation (briefing) of how each stage would go, in order to guide students on how to proceed, that is, that there would be a systematic observation of the service provided by the student and registration by the instructor, but without intervention, that the instructors were there only to observe and offer some material if requested by the student. At this stage, it was reiterated that even if the student realized that he performed an incorrect action, he should follow the service as if he were in a real situation.

At the end of each simulated service, the instructor performed the summary of the service individually, a succinct explanation of the critical points, errors and successes (debriefing) allowing feedback and feedback to the participants, in addition to a group evaluation focused on collective feedback.

III. RESULTS AND DISCUSSION

It was evidenced that the simulation scenario allows the student to experience, in real time, frequent situations in the practice of care, in which the consolidation of knowledge and experiences occur safely and echoes in practice as a tool that strengthens and consolidates the theoretical aspects learned in the classroom setting.

It should be noted that the emotional difficulties found in the clinical activities reported by the students, occur due to insecurity in carrying out the procedures and unpreparedness in the execution of some techniques.

Corroborating the findings of this study, it is described that the development of care-care practices can generate anxiety, stressful factors capable of producing anguish in the student. This fact is mainly due to inexperience, insecurity, unpreparedness in the execution of the techniques, the fear of making mistakes and the clinical evaluation. In this understanding, training prior to internships in the clinical field, carried out in the classroom and in the laboratory, contributes to the construction of these skills and the development of student safety, reducing the influence of emotional factors on their efforts. In this

scenario, the need for prior practice is considered mandatory for the consolidation of higher education curricula in health, in which higher education institutions must provide laboratories for training basic psychomotor skills for the training of generalist nurses⁽⁵⁾.

It was possible to verify in this experience that the coping with the unknown and the intensity of involvement with the simulated situations were imperative factors for the expression of feelings such as stress, anxiety and insecurity that predominates among the students.

It is considered that the performance during the realistic simulation in this experiment went beyond the development of psychomotor and technical skills. The findings revealed the students' ability to interact in a more participatory and motivated way, by identifying and recognizing signs and symptoms that are known, but remain hidden and poorly systematized when exposed to an unexpected clinical situation, which sometimes culminates in a deficient skills for the identification of clinical conditions that suggest deterioration of the patient in the emergency and the correct way to provide care in these situations.

Nursing is recognized as a profession that is closely linked to technical and manual procedures, thus, the acquisition of psychomotor skills is essential to provide qualitative care to patients and their families. Considering patient safety, the development of these psychomotor skills cannot be neglected during the training process during graduation. In addition, graduation also contributes to the development of managerial and administrative skills, providing experience in carrying out nursing management activities, which are essential to guide professional practice⁽⁵⁾.

Realistic simulation is recognized today as a driving tool in the health scenario, being suggested as a planned and applied practice for the qualitative training of undergraduate and nursing professionals, benefiting the teaching and learning process both in undergraduate and in continuing education and permanent. The insertion of simulation as a training strategy, continuing education and evaluating professionals is relevant in the health scenario⁽⁶⁾.

In this context, the laboratories provide the articulation of diverse knowledge and the overcoming of the dichotomy between professional and general education of the student. This facilitates learning and generates reflection on the practices performed, more than simply guaranteeing training to exercise functions⁽⁷⁾.

The lack of technical skill is reported in some studies by many recent graduates in the field of nursing as an

obstacle to be overcome when being incorporated as professionals in health services, confirming that the psychomotor skills of recent graduates, necessary for the development of technical competence the professional nurse, does not meet the requirements of the work environment during graduation⁽⁵⁾.

In this scenario, new professionals are shaped to suit the type of assistance offered. For students, self-confidence in doing professional in their first job is directly associated with academic experiences and how much they were able to learn and practice during graduation⁽⁵⁻⁷⁾.

It is known that the health environment is increasingly complex, dynamic and constantly changing. Thus, nurses must work in an efficient and collaborative way with their nursing team and multidisciplinary team. It is through collaborative practice that professionals from multidisciplinary teams are encouraged to work together, in an interdisciplinary way, and with patients and their families, in order to improve and achieve the highest quality in the results related to the care process, reducing health costs and, consequently, achieving greater organizational efficiency⁽⁶⁾.

In this context, the clinical simulation laboratory becomes an efficient means of providing skills training, mainly psychomotor, where the student can perform the same procedure repeatedly to improve the technique without putting patients at risk. However, in the context that involves training psychomotor skills, it is essential that, at a later time, students now provided with more security and knowledge, acquired in a controlled environment can experience supervised practice in a real environment. It is considered that the experiences apprehended critically and reflexively during the supervised internships are the main responsible for the personal and professional growth of the student, providing him / her with greater security at the end of the course. This experience provides the construction of a professional identity for performance, leading him to appear more and more prepared and competent⁽⁵⁾.

In this process that permeates teaching with the use of realistic simulation, aiming to meet the proposed learning objectives, teachers act as facilitators, emphasizing self-directed learning, centered on the student, in which, it can be observed that teaching in the laboratory requires constant interaction between the protagonists, academics and teachers when integrating theory with practice. The simulations humanize teaching and contribute to overcoming difficulties and to controlling students' emotional stress, reinforcing the relevance of the interaction between teachers and students⁽⁸⁾.

Simulation is a process of cognitive and behavioral education, given the high levels of self-esteem and self-confidence that it can provide, thus expanding the possibilities of the individual to assimilate information and obtain gains in his learning process⁽⁵⁾.

Although the university setting this experience has a curricular design with a significant practical workload, the students consider the practical opportunities still insufficient, in addition to recognizing this component as essential, which must be carried out from the beginning of the course through laboratory practices.

It should be noted that the simulation laboratories are in the process of implementation and improvement in the educational institution and their incorporation into active teaching methodology should, in the medium and long term, provide positive changes in the profile of students in relation to their technical skills and, consequently, in critical reasoning.

It is possible to observe, from the students' speeches, a reduced contact with the practice of caring for critically ill patients in urgency and emergency, which we believe is directly linked to the profile of generalist education in Nursing in Brazil.

In this context, many students only contact emergency services in their final year of graduation, an opportunity not available to everyone.

However, we consider the benefits that this contact can bring to the development of nursing skills and competences undeniable. The urgencies, for providing care to patients of various specialties and varying degrees of complexity, provide the opportunity to apply the theory in the practice of a significant amount of procedures and skills, in addition to the contact of students with a wide multidisciplinary team.

We understand that the inclusion of students in these scenarios, however, presents obstacles, such as the need for adequate preparation of teacher teachers to perform supervision; restricted environment, reducing the number of students and teachers in the field; and the fact that the environment has the potential to generate anxiety due to the constant imminent risk of death and the high specialization required.

Reiterating the importance of teaching by simulation in the teaching-learning process, in this experience it was possible to observe among the students, that the contact with the dummies for simulation of cardiopulmonary resuscitation (CPR), for example, helped to work on posture, ergonomics, control of strength and technique to be applied during this procedure and other

recommendations that would be almost impossible and somewhat dangerous to teach / learn in a real setting, given that cardiopulmonary arrest is an extreme medical emergency.

Leaving for the practical field, after classes with the repetition of techniques and development of these skills in the laboratory, the students were safe in the execution of the tasks, a situation experienced in supervised practice and reported by the students, where they were faced with a cardiorespiratory arrest or the evaluation of patients in the various clinical entities, were not intimidated and afraid to interact with the multiprofessional assistant team, nor with patients and their families, showing the effectiveness of previous training in the laboratory with the use of realistic simulation.

IV. CONCLUSION

The results showed that the increase in self-confidence and satisfaction with the simulation has a protective impact on the level of anxiety of students, in addition to increasing the confidence and self-efficacy of patient care.

Surely, experiments with simulation are capable of promoting learning outcomes that are well articulated between theory and practice. Simulation stands out as a strategy that involves learners from different perspectives, making them reflect and reformulate their practice, prompting thinking and doing simultaneously.

We conclude that classes with the realistic simulation method in the laboratory facilitate the development of skills, not only from a practical point of view, but, above all, emotional and psychological, given that students can familiarize themselves previously with materials and equipment and design for a real care situation contextualized with everyday life.

We reiterate that nurses involved in the teaching and learning process of the 21st century need to develop a reflective process, in the sense of seeking strategies to innovate teaching, with simulation being an effective tool in professional education and in the modern context of teaching for qualitative health care. .

The simulation strategy aims to develop the skills needed to master competence in the areas of health, management and systematization of care. They are privileged and protected spaces that simulate scenarios of health care practice safely.

Students perform consultations on simulated patients, that is, procedures on mannequins, being accompanied by a facilitator who will assess the performance of the skills geared to the profile of the professional to be trained. All

this innovation helps the facilitators to contribute to the excellence of the teaching-learning process, increasingly focused on what the labor market requires from a nurse; thinking, critical, reflective in his doing.

At the same time, the nursing student develops a process of thinking and rethinking, to give a new meaning to his education, making it possible to see in the academy the need to build and develop his technical and scientific skills to do the best, supporting his training in scientific consensus and evidence that promotes the highest levels of quality of health care.

Simulation has been constituted as a facilitating strategy used in the disciplines of undergraduate nursing courses to teach the techniques and procedures necessary to perform care. In Brazil, experiences indicate that the simulated practices have contributed significantly to the qualitative training of students, corroborating the improvement and transition of virtual and controlled environments in laboratories to assist patients in the various scenarios and levels of complexity of the health system.

The results of this experiment suggest that the application of simulated strategies in the laboratory can be associated with computer technology, as support for classroom teaching. Teachers and students are available for innovative ways of teaching, particularly simulations.

The psychomotor and administrative skills of nursing students are often insufficient to meet the demands of health services, corroborating the idea that recent graduates may face difficulties in adapting to the practice as nurses with regard to direct assistance and execution of technical assistance procedures.

Thus, the results of this research contribute to the reflection on the teaching of nursing in all educational institutions that have similar teaching methodology; instigate those responsible for the basis of nursing education and allow them to question the actions currently developed and their effectiveness in forming the professional profile of future nurses; give rise to research, focusing on nursing skills, teaching methods and how training processes are being built in higher education institutions.

The scarcity of scientific productions directly linked to the proposed theme from this perspective was the main limitation found. From the results of this study, the need for further study on the topic by the academic community is reiterated, considering its relevance.

Despite the lack of studies at national and international levels, dedicated to investigating the teaching-learning

process and the relationships that permeate the implementation and evaluation of teaching by simulation, especially in the training of nurses, with its implications for professional performance, further studies are suggested.

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